

LAMARCK: A NEGLECTED GENIUS

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A LITTLE band of fourteen grenadiers stood alone, facing a whole army of Germans. Youngest of all the Frenchmen was a thin boy, Jean-Baptiste-Pierre-Antoine de Monet, to be known to future generations as a great scientist, the Chevalier de Lamarck. An old grenadier, who saw that the company had been forgotten by the rest of the French Army in its disastrous defeat at Lippstadt, advised that the little band should escape as fast as it could. "But," said the young chevalier, "we are assigned to this post and we should not withdraw from it until we are relieved." And so they stayed. Presently a French colonel, perceiving the little company holding its ground, gave word to them to retreat. Soon afterwards Lamarck was promoted to the rank of an officer.

This story is characteristic of the whole career of Lamarck, a man whom no one ever appreciated in his time, who was ridiculed and even persecuted while he lived, and yet held steadfastly to his beliefs and principles. Today the verdict of men of science has raised the long-forgotten name of Lamarck to the rank of a general in the army of science.

Lamarck, who had been born in a little Picardy farmhouse on August 1, 1744, was still a young man when he published his first important book, an illustrated guide to the flora of France. The popular writer, Rousseau, had first turned Lamarck's attention to botany and had already made "herborizing" a fashionable pastime. When Lamarck published his three immense and expensive volumes on French flowers they were all immediately bought, and this was perhaps the peak of Lamarck's popularity with the general public. A polite interest in botany was just then the rage among young ladies and noblemen looking for a new amusement, and their interest in the science was probably not very sincere. But it did give Lamarck a chance to publish this mighty treatise.

But the day of idle noblemen and noblewomen was soon to end. The Revolution came, and The Terror, and several great scientists lost their heads in the bloody confusion that followed. Throughout it all the little band of scientists at the *Jardin des Plantes*, or Botanical Garden of Paris, tried to keep afloat. There was little money to be wrung from a pugnacious government run by ignorant peasants, and there were times when it seemed that all the small band of learning would be thrown out on the world. Lamarck, who had six children and a salary of about five hundred dollars a

year, had personal enemies to contend with also, for some scientists of influence did not like him. He did in fact lose his place as a botanist, but he gained another as a zoologist, and perhaps this was a real benefit to science and even to Lamarck.

Once fairly started on the study of animals, in which Lamarck had always been interested, he revolutionized all notions of how various kinds of animals were related to each other by families and groups of families. In doing this he set up his own, less-known name against the authority of the great Linnaeus, who had classified animals differently.

In truth, however, Linnaeus was a better botanist than a zoologist, and Lamarck undoubtedly greatly improved our ideas about zoology.

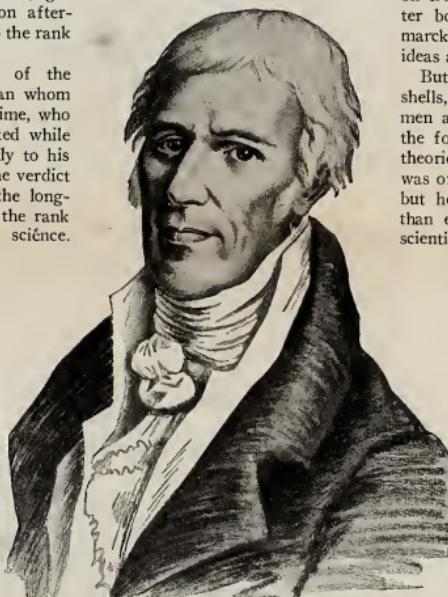
But it is not as a great authority on shells, nor as a systematic botanist, that men are now honoring Lamarck, but as the founder of the earliest of the great theories of evolution. Lamarck's mind was often faulty when it came to details, but he had one ability that was better than exactness in small things—he had scientific imagination. At a time when

other people merely regarded it as mildly curious and interesting that all desert plants, for instance, had certain similarities, Lamarck was asking himself *why* this was. At a time when conchologists were not interested in fossil shells because they were not "pretty" like recent shells, Lamarck was reading in the records left by fossils the history of the animal kingdom.

Lamarck's theory of evolution, substantially, was this: Plants and animals have changed because they adapted themselves to different conditions; a water plant whose leaves grow in a certain way

advantageous to the plant while it is in water will, if the plant is transferred to dry soil, produce different leaves. A botanist, comparing the two plants, would call them two different species. Actually they would be one species. However, through the long ages, conditions imposed on plants and animals have left their indelible imprint, and so it is that new kinds of plants and animals have arisen.

Whether or not Lamarck was right has been hotly debated from that day to this. Cuvier, the great zoologist, who owed his start in the world to Lamarck, regarded his ideas as nonsense, and even ridiculed Lamarck for these views in his burial oration over the great man's grave. Cuvier built up such an enormous reputation for himself, partly deserved, partly sheer self-advertisement, that everyone believed what



THE CHEVALIER DE LAMARCK—1744-1829

he said, and so it became the fashion to ridicule Lamarck's view; Darwin called it rubbish and Lowell satirized it.

Today, however, men are beginning to go back to Lamarck, and there are some scientists, at least, who believe that he was closer to the truth than any of the other great supporters of evolution. There are some points in Lamarck's ideas that are indeed quite laughable. But he may have been right in others, and in any case honor is due to his great and liberal and imaginative mind.

In his day the idea that life, all plants and animals, had never changed one jot but had stayed as fixed as though carved rocks instead of living things, was more thoroughly ingrained in the heads of people than in Darwin's time. As

an evolutionist, Lamarck was, then, more of a trail-breaker. Others before Lamarck had guessed at evolution in the process of abstract thinking. Lamarck arrived at his conclusions by observing the facts, by using his eyes and reading the handwriting in the rocks. He reasoned his way; he did not persuade himself.

Lamarck died blind, from too long use of the microscope he died completely forgotten by scientists of his time; he died poor. At his funeral Cuvier abused his memory vilely; a few spoke in his defense, but no one thought fit to provide him with a decent burial. Like Mozart's, his body was flung into a general trench so that today we know not where his bones rest. No matter, his greatness lives on, and will live.

Plants That Catch Live Prey

By BEN HUR LAMPMAN

THIS COMMON need of all living things is substance, and the pursuit of this need motivates life. Huxley has called attention, as many another scientist, to the fact that the essential components of the lily and the leopard, let us say, are identical, and that the cells from which they evolved are strikingly similar. Each is bound to the wheel of life, each draws sustenance from the breast of earth, and each in its time essays the elemental return. Understanding these primary truths, there is less of astonishment in the consideration of the pitcher plant. It merely has availed itself of a more direct attack upon plant foods than have its fellows of the forest, and has assumed certain characteristics of the animal.

Other plants thrive upon the foods of the soil, which are largely the product of decomposition, both animal and vegetable—foods that are again reentering the cycle. But pitcher plants, and the nepenthes, seize their prey like any sentient strategist of the higher kingdom, and modify the common rule by appropriating living bodies for their banquets. They do not wait for death to bring them the wastage of life—they enforce death, and hence are carnivorous. In a sense, they are ferocious little exemplars of the kinship of all living things, a unity set at naught by appetite. Chancing upon one the observer may well reflect that there, rooted and leafed, is another such as he, who must eat to live.

An elongation of the leaf of the pitcher plant, terminating in that curious stomachlike structure which is the destiny of many a fly and beetle, is baited with nectar that lures the inquisitive insect—also in pursuit of life. Alas, all those who enter there leave hope behind. For them the chapter is finished. Barred from escape, they struggle helplessly against a treacherous incline and so are



PITCHER PLANT

One of those that seize upon live prey as food.

the digestive juices of the pitcher and assimilated without more ado. Long and long ago it was found that this plant, of the thousands of species that strove for sustenance, discovered that an elongated and receptive leaf would entrap nitrogenous food, and that by such an expedient it need not wait with hungry roots for dinner in a barren soil. Nepenthe in the classics is the sweet drug of forgetfulness, such as Helen quaffed when she sought oblivion from sorrow. The nepenthes of the woodland offer forgetfulness, in all truth.

The Venus flytrap is but another amazing instance of animal instinct in the plant world. Nay, of both flytrap and pitcher plant it has been written, and more particularly of the former, that the observer is inclined to believe that he has encountered consciousness. The device of the flytrap is also a leaf, but hinged, and set with sensitive hairs. Like the pitcher plant, it offers a lure of sweetness. No sooner has the infatuated insect so much as touched one of the fateful hairs than the hinged leaf closes and entombs him, and the digestive cells exude their juices, and so no more of the adventurer. The flytrap opens to cast forth its waste upon the ground, and the waste enters the soil, and between soil and plant Providence has contrived to complete the cycle for a gnat. It is said of the flytrap that, when incited to close by the introduction of a substance unfit for food, presently it will open again and eject the cheat.

Vines that persist in twining either to the left or right, leaves that tremble when touched, vegetation that creeps toward the sun as eagerly as a spent traveler toward water, plants that seize and hold and consume their

plunged into food—all kinsmen of ours, and with us kindred to the dust.



